IEC TR 62614-2

Edition 1.0 2015-07

TECHNICAL REPORT

Fibre optics – Multimode launch conditions – Part 2: Determination of launch condition requirements for measuring multimode attenuation

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 33.180.01

ISBN 978-2-8322-2794-7

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

FIBRE OPTICS – MULTIMODE LAUNCH CONDITIONS –

Part 2: Determination of launch condition requirements for measuring multimode attenuation

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a Technical Report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

IEC TR 62614-2, which is a Technical Report, has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics.

This first edition cancels and replaces IEC TR 61282-11 published in 2012. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- significant reduction to the clause on uncertainties;
- technical edits throughout in addition to updates to key normative references;
- incorporation of additional figures related to the wavelength bias between 850 nm and 1 300 nm as well as the encircled flux limit of 10 Gigabit Ethernet VCSELs.

This publication contains an attached file titled, “TR 62614-2 Supplemental Data”, in the form of an Excel spreadsheet. This file is intended to be used as a complement and does not form an integral part of this Technical Report.

The text of this Technical Report is based on the following documents:

Enquiry draft	Report on voting
86C/1265/DTR	86C/1276A/RVC

Full information on the voting for the approval of this Technical Report can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62614 series, published under the general title *Fibre optics – Multimode launch conditions*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

At the meeting of IEC TC86 and its subcommittees and working groups in Cape Town in 2005, there were numerous discussions regarding measurements on multimode fibres, cables, passive components and cable plants. Liaisons were also received from ISO/IEC JTC1 SC25 WG3 that reported on the requirements of ISO/IEC14763-3 for testing fibre optic cabling in premises cabling. This Technical Report used a mode power distribution template in an attempt to control the launch conditions at the location of the reference connector to improve measurement accuracy and reduce uncertainty when testing the attenuation of multimode fibre optic cabling. IEC SC86B had also adopted the metric. It was decided to set up a "Multimode Launch Co-ordinating Group" referred to as MMLCG. This would be set up directly reporting to IEC TC86 and include representatives from interested persons in subcommittees 86A, 86B and 86C as well as ISO/IEC JTC1 SC25 WG3. The scope of the MMLCG was defined as:

"To coordinate the harmonization of the variety of multimode modal launch conditions that exist within the documents being prepared and published by the subcommittees of IEC TC86 for the purpose of attenuation and return loss measurements."

The intent of this Technical Report is to keep available the key technical aspects issued by the MMLCG. The key documents used in the developmental of this Technical Report have been retained and are stored on the IEC collaboration tools for reference.

FIBRE OPTICS – MULTIMODE LAUNCH CONDITIONS –

Part 2: Determination of launch condition requirements for measuring multimode attenuation

1 Scope

IEC TR 62614-2, which is a Technical Report, is intended to show the background of encircled flux for the characterization of multimode launch conditions. This includes the selection of the encircled flux and the definition of the encircled flux requirements in conjunction with the implied variation for all multimode attenuation and return loss measurement methods on graded index multimode fibre products.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60793-2-10, *Optical fibres – Part 2-10: Product specifications – Sectional specification for category A1 multimode fibres*

IEC 61280-1-4:2009, *Fibre optic communication subsystem test procedures – Part 1-4: General communication subsystems – Light source encircled flux measurement method*

IEC 61280-4-1, 2009, *Fibre optic communication subsystem test procedures – Part 4-1: Installed cable plant – Multimode attenuation measurement*

IEC TR 61282-14, *Fibre optic communication system design guides – Part 14: Determination of the uncertainties of the attenuation measurement of cabling*[1]

IEC 61300-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 1: General and guidance*

IEC 61745, *End-face image analysis procedure for the calibration of optical fibre geometry test sets*

IEC 62614, *Fibre optics – Launch condition requirements for measuring multimode attenuation*

ISO/IEC 14763-3, *Information technology – Implementation and operation of customer premises cabling – Part 3: Testing of optical fibre cabling*

---

1 Under consideration.